

Claims

1. Device for carrying out biochemical reactions, in particular for cell-free polypeptide biosynthesis and/or for the production of biologically active proteins with a native structure composed of an external housing which encloses an inner housing with incorporated wells and a supply chamber, wherein the wells of the inner housing each contain a producing system during the biochemical reaction, the supply chamber contains a supply liquid during the biochemical reaction and the wells of the inner housing and the supply chamber are separated by a semipermeable membrane characterized in that the inner housing has at least two wells the lower ends of which are closed by a semipermeable membrane and the upper ends of which protrude from the supply liquid contained in the supply chamber, and is connected to means for moving and incubating the producing systems and the supply liquid.
2. Device as claimed in claim 1, characterized in that the inner housing has between 2 and ca. 1000 wells.
3. Device as claimed in claim 1 or 2, characterized in that the side walls of the wells are coated with a component which specifically binds the in vitro synthesized proteins.
4. Device as claimed in claim 3, characterized in that the wells are coated with components that are suitable for purifying polypeptides that bind to the components.

5. Device as claimed in claim 3 or 4, characterized in that the wells are coated with streptactin, avidin or streptavidin.

6. Device as claimed in one of the claims 1-5, characterized in that the wells of the inner housing each have a volume between 50 μ l and 10 ml.

7. Device as claimed in one of the claims 1-6, characterized in that the volume of the supply solution is five to twenty-times the sum of the volumes of the wells.

8. Device as claimed in one of the claims 1-7, characterized in that the semipermeable membrane is a dialysis membrane or an ultrafiltration membrane with a pore size of 3 to 100 kDa.

9. Device as claimed in one of the claims 1-8, characterized in that in order to seal the openings of the wells of the inner housing that face upwards, each well is individually or all wells together are provided with a cap closure or foil or a closing cover is present to seal the outer housing.

10. Device as claimed in one of the claims 1-9, characterized in that the wells of the inner housing are composed of blocks having the same bore geometry and a membrane fixed between the blocks.

11. Device as claimed in one of the claims 1-10, characterized in that the movement means is such that the producing system and supply solution are mixed simultaneously.

12. Device as claimed in claim 11, characterized in that the mixing is achieved by a shaking or stirring element.

13. Method for carrying out one or several biochemical reactions concurrently by means of a device as claimed in one of the claims 1-12, characterized in that the supply liquid in the supply chamber is not subjected to an external applied pressure during the biochemical reaction and thus the molecular exchange between the supply chamber and the individual wells of the inner housing is essentially based on diffusion.

14. Method as claimed in claim 13 in conjunction with claim 11 or 12, characterized in that the supply liquid and optionally the producing system in each of the wells of the inner housing are moved during the biochemical reaction by means of a magnetic stirring element.

15. Kit composed of the following components

- 1) a solution which contains a substance buffering between pH 7 and 8, 150 to 400 mM potassium ions, 10 to 50 mM magnesium ions, nucleotide triphosphates, amino acids and a substance reducing sulfide groups,

- 2) an energy-rich compound,
- 3) a tRNA fraction and optionally
- 4) a RNA polymerase and/or
- 5) a cell-free lysate.

Pdt *MP2*